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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,675	12/11/2003	William R. Trutna JR.	10004284-1	8969

7590 03/23/2007  
AGILENT TECHNOLOGIES, INC.  
Legal Department, DL 429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER
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AGHDAM, FRESHTEH N

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/733,675	TRUTNA ET AL.	
	Examiner	Art Unit	
	Freshteh N. Aghdam	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☐ This action is FINAL.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 2/26/2007 have been fully considered but they are not persuasive.

Applicant's Argument: Regarding restriction/ election requirement, applicant requested reconsideration and withdrawal of the restriction requirement with respect to claims 1-25 and argues that it is not a burden to the examiner to examine both groups of the claim set even though the inventions are distinct.

Examiner's Response: Regarding applicant's argument set forth above, examiner disagrees with the applicant since the claimed limitations are not exactly reverse of one another. Therefore, it would have been a burden to the examiner to examine both groups. The unelected group is classified in subclass 375/147 that would require a different search.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo (US 6,839,335), and further in view of Liu et al (US 2001/0007574).

As to claims 1 and 11, Sudo discloses a method of and an apparatus for transmitting information signals via multiple transmission channels comprising: encoding each information signal with a respective spreading code to generate a coded signal corresponding to each bit of the spreading code, the spreading codes are mutually different (Fig. 1, means 1 and spreading codes 1-n; Col. 1, Lines 28-34); allocating the coded signals corresponding to the same bit of the spreading codes to a respective one of the transmission channels (Fig. 1; Col. 1, Lines 57-64); and modulating the coded signals on each channel (Fig. 1, means 4). Sudo is not explicit about analog summing the coded signals on each of the respective transmission channels. Liu discloses a transmission system and/ or method that the bits that are allocated to each transmission channel are summed (Par. 54) prior to signal transmission. One of ordinary skill in the art would recognize that the summation could be performed digitally or in analog domain, wherein the analog summer is typically smaller than the digital one. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Liu with Sudo in order to transmit a plurality of bits on each transmission channel by summing the bits to be transmitted on each transmission channel.

As to claims 2 and 12, Sudo further discloses that the spreading codes are orthogonal (Col. 1, Lines 28-34).

Claims 3 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo and Liu et al, further in view of Shattile (US 2002/0150070).

As to claims 3 and 13, Sudo and Liu teach all the subject matter claimed in claim 1, except for the spreading codes are mutually quasi-orthogonal. One of ordinary skill in the art would recognize that different types of spreading codes such as orthogonal and quasi-orthogonal spreading codes, wherein each one has an advantage and a disadvantage, for example generally quasi-orthogonal codes are not preferred over orthogonal codes because of the issue of interference; in contrast, quasi-orthogonal codes are less restricted since more quasi-orthogonal codes can be generated comparing to orthogonal codes as it is evidenced by Shattil (US 2002/0150070). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Shattil with Sudo and Liu for the reason stated above.

Claims 4-5 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo and Liu et al, further in view of van der Gracht et al (US 4,835,517).

As to claims 4-5 and 17-18, Sudo and Liu teach all the subject matter claimed in claim 1, except for spreading comprises exclusive-NORing each information signal with the bits of the respective code. One of ordinary skill in the art would clearly recognize that it is well known in the art to perform multiplication utilizing either XOR or XNOR logic gates, wherein the spreading code comprises a plurality of bits as it is evidenced by van der Gracht (Col. 4, Lines 47-48). Therefore, it would have been obvious to combine the teaching of van der Gracht with Sudo and Liu in order to spread the information signal by multiplying the information signal by a spreading code.

Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo and Liu et al, further in view of Balachandran et al (US 7,187,715).

As to claims 6 and 19, Sudo and Liu teach all the subject matter claimed above, except for each spreading code comprises bits each in one of a first state (i.e. +1) and a second state (-1); and the encoding comprises for each bit of the spreading code in the first state, outputting the information signal as the coded signal corresponding to the bit of the spreading code; and for each bit of the spreading code in the second state, inverting the information signal and outputting the inverted information signal as the coded signal corresponding to the bit of the spreading code. One of ordinary skill in the art would recognize that it is well known in the art to spread the information signal, wherein each spreading code comprises bits each in one of a first state (i.e. +1) and a second state (-1); and the encoding comprises for each bit of the spreading code in the first state, outputting the information signal as the coded signal corresponding to the bit of the spreading code; and for each bit of the spreading code in the second state, inverting the information signal and outputting the inverted information signal as the coded signal corresponding to the bit of the spreading code as it is evidenced by Balachandran (Fig. 5, parts b and c). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Balachandran with Sudo and Liu in order to spread the information signal to be transmitted by multiplying each bit of the information signal with the corresponding bit of the spreading code in order to reduce power consumption in the communication system.

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Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo and Liu et al, further in view of Way (US 2002/0021464).

As to claims 14-16, Sudo discloses utilizing frequency division multiplexing scheme to transmit information signals. Sudo and Liu are not explicit about the transmitter additionally comprises optical transmitter coupled to each transmission channel, wherein the output of the optical transmitters are connected to a multiplexer and the output of the multiplexer is coupled to a transmission medium that is optical fiber. Way discloses a type of frequency division multiplexing method comprising optical transmitters (Fig. 1, means 20) that are connected to a multiplexer (means 26), wherein the output of the multiplexer is coupled to a transmission medium that is optical fiber (means 16; Par. 3 and 27-29). Therefore, it would have been obvious to combine the teaching of Way with Sudo and Liu in order to rapidly convey large amount of information between two points with very low loss by utilizing an optical network (Par. 3).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Molstad et al (US 2003/0151855) see paragraph 29 regarding analog versus digital summation; and Hoang et al (US 2004/0246973) see paragraph 11 regarding WDM and FDM transmission schemes.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

March 16, 2007

  
**KEVIN BURD**  
**PRIMARY EXAMINER**

Freshteh Aghdam  
Examiner  
Art Unit 2611